

# **EXHIBIT A**

CURRICULUM VITAE OF PETER B. REICH

November 2016

**BUSINESS ADDRESS**

Department of Forest Resources  
1530 Cleveland Ave. No., University of Minnesota  
St. Paul, MN 55108 (612-624-4270, FAX 625-5212)  
preich@umn.edu

**HOME ADDRESS**

751 Pine Cone Trail (POB 145)  
Marine on St. Croix, MN 55047  
651-433-1341

**EDUCATION**

Ph.D. (1983) Department of Natural Resources  
Cornell University, Ithaca, New York  
Major in environmental biology and plant ecology  
  
M.S. (1977) School of Forestry, Fisheries and Wildlife  
University of Missouri, Columbia, Missouri  
Major in forest ecology  
  
B.A. (1974) Goddard College, Plainfield, Vermont  
Majors in creative writing and physics

**PROFESSIONAL EXPERIENCE** (post-Ph.D.)

Professor and F.B. Hubachek, Sr. Chair, University of Minnesota (1991- present)  
Distinguished McKnight University Professor, University of Minnesota (2003- present)  
Regents Professor, University of Minnesota (2007- present)  
Resident Fellow, University of Minnesota Institute on the Environment (2009-present)  
Foundation Director (2011-13), Chief Scientist (2013- present), Hawkesbury Institute for the Environment,  
University of Western Sydney, Richmond, NSW, Australia (joint affiliation with U. of Minnesota)  
Member, Graduate Faculties: Ecology, Evolution and Behavior; Forest Ecology and Management; Plant  
Biological Sciences; and Conservation Biology Programs; University of Minnesota (1991- present)  
Visiting Research Fellow, Laboratorio Ecotono, Universidad Nacional de Comahue, Bariloche, Argentina, 2005  
Distinguished Visiting Fellow, Dept Biological Sciences, Macquarie University, Sydney, Australia, (1998-99)  
Associate Professor (1989-91), Assistant Professor (1985-89)  
Department of Forestry, University of Wisconsin, Madison, WI  
Postdoctoral Associate (1983-85), Boyce Thompson Institute; Cornell University, Ithaca, NY

**UNIVERSITY SERVICE** (selected, since 2004)

Grand Challenges Exploratory Research Grants Review Panel (Member): Evaluate and prioritize 82 research proposals, 2016  
Grand Challenges Research Strategies Team (Member): Identify areas of exceptional cross-disciplinary research strength at the University of Minnesota to harness to more powerfully address society's most complex and consequential problems; Office of the Senior Vice President for Academic Affairs and Provost, 2015-2016  
Cornerstone Team (Co-Chair): Accelerate Transfer of Knowledge for the Public Good (one of four bases of Five-Year Strategic Plan, Office of the Vice-President for Research), University of Minnesota, 2014-2015  
Distinguished McKnight Professorship Selection Committee (Member), University of Minnesota, 2008-2010  
Biosphere-Atmosphere Science Search Committee (Member), Department of Soil, Water, and Climate and Department of Forest Resources, 2007  
Silviculture Search Committee (Member), Department of Forest Resources, 2006-07  
Dean Search Committee (Member), College of Food, Agriculture, and Natural Resources Sciences, 2006  
University of Minnesota Committee to Develop a Blueprint for the Institute on the Environment (Member), 2006  
Forest Ecology Search Committee (Chair), Department of Forest Resources, 2004  
Vice-President for Research Search Committee (Member), University of Minnesota, 2004

Cedar Creek Natural History Area Executive Committee (Member), 2001- 2008

# **HONORS, PROFESSIONAL RECOGNITION, SYNERGISTIC ACTIVITIES, AND SERVICE** (selected)

American Academy of Arts and Sciences, Member (elected in 2011)

BBVA Prize Laureate (BBVA Foundation Frontiers of Knowledge Award in Ecology and Conservation Biology; Madrid, June 2010)

Citation Indices: Google Scholar (1 June, 2016), total = 58,094 from >480 articles, 30,754 since 2011; h-index = 120; Web of Science Citation Index (March 2016): total = 44,763 from >480 articles; h-index = 114.

According to Thompson Reuters Web of Science, among Most Highly Cited 20 Ecologists and Environmental Scientists in the World (out of  $\approx$  500,000), every 10-year period 1991-2001 to 2005-2015

Invited speaker, plenary and keynote addresses, >180 national/international symposium, research conferences, government, agency, and university seminars; e.g., selected, Australian National Univ. (2011), BIOGEOMON 2014 International Conference, Keynote Speaker, Univ. of Bayreuth, Germany (2014), Carleton College (2014), Centre d'étude de la forêt, Annual Conference, Keynote Address, Port Orford, Quebec, March (2010); Chicago Botanic Garden (2012); Cornell Univ. (1997, 2006); DOE Terrestrial Ecosystem Science Annual Meeting, Potomac, MD (2014); DOE Office of Biological and Environmental Research Workshop, "Trait Methods for Representing Ecosystem Change", Rockville, MD (2015); Duke Univ. (1999, 2003, 2008); Fundación BBVA, Biodiversity and Global Change Lecture Series, Madrid and Barcelona, Spain (2007); Gordon Research Conference, Metabolic Basis of Ecology (2004, 2006); Harvard Univ., Biodiversity, Ecology, and Global Change Lecture Series (2007); Harvard Univ. 6<sup>th</sup> Symposium on Plant Biology (2010); Hokkaido Univ. (1993); Indiana Univ. (2009); Kyoto Univ. (1993); Korea University and Korea National Institute of Forest Science (2016); Lakehead Univ., Ontario, Canada (2010); Lanzhou Univ., (2014); Macquarie Univ., Sydney, Australia (1999, 2007, 2013); McGill Univ. (1999, 2005, 2007); University of Montana (2016); Nanjing Univ. (2014); Nanjing Univ. of Information, Science and Technology (2014); Northern Arizona U. (2010); 24th New Phytologist Symposium - Plant respiration and Climate Change, Oxford Univ. (2010); Peking Univ. (2014); Pennsylvania State Univ., Invited Speaker, 7th Plant Biology Symposium (2009); Princeton Univ. (The John Bonner Lecture)(2006); Stanford Univ. (Inaugural Global Change Series, 2004); SUNY-ESF (2012); SUNY Stony Brook (2006); Texas A& M Univ. (2004, 2008); Vrije Universiteit, Amsterdam; Universitat Autònoma de Barcelona (2007); Univ. of Colorado (2001); Univ. of Connecticut (2010), Univ. of Georgia (2008); Univ. of Illinois (2001); Univ. of Massachusetts Symposium on Plant Biology (2004); Univ. of Melbourne (2013), Univ. of Missouri (2008); Univ. of Nebraska (2012); U. of Nevada (2009); Univ. of Quebec at Montreal (2011); Univ. of Washington (1988); Univ. of Wisconsin-Madison (2013); Univ. of Wisconsin-Milwaukee (2013); Washington Univ. (2003); West Virginia U (2012). Co-founder, Writer, Editor, MinuteEarth <https://www.youtube.com/user/minutearth>; YouTube (and Facebook, iTunes, Vessel platforms) video channel dedicated to advancing scientific understanding and interest in earth and environmental science, global change science, and ecology (>85 videos released; >1,300,000 subscribers and > 80 million views since March 2013).

Editorial Board, Topics in Statistical Ecology, Springer (2011- )

Co-chair, Physiological Ecology Section, Faculty of 1000 (2010- )

Scientific Advisory Board, FunDivEUROPE (FUNctional significance of forest bioDiversity in EUROPE) Project, 2010 - present

Climate Science Rapid Response Team (charter member, 2010- ), scientist network providing rapid, high-quality information to media and government

Minnesota Forest Resources Council, Research Advisory Committee (2008- present)

Commissioner, Mahtomedi City Environmental Commission (2007-2010)

*Nature* Research Highlight. Our experiment (*B4Warmed: Boreal Forest Warming at an Ecotone in Danger*) featured in *Nature*, 30 July 2009 "Forest growth studies begin to turn up the heat", Vol. 460, p. 559.

Commencement Speaker, Univ. of Minnesota Graduate School commencement, "Dancing on Thin Ice", May 9, 2008

*Nature* Research Highlight. Our paper (Holdsworth *et al.* 2007, *Conserv. Biol.*) featured in *Nature*, 23 August 2007 "Worm Wood", Vol. 448, p. 843.

Co-initiator of the "Minnesota 2050: Pathways to a Sustainable Future" Project, partnership with >100 citizens from multiple stake-holder groups, working towards a public policy and education-relevant vision of an environmentally and economically sustainable regional future.

*Nature* Research Highlight. Our papers (*Wright, Reich, Westoby & GLOPNET 2004, Nature; Shipley et al. 2006, Ecology*, and two others) featured in *Nature*, 30 November 2006 “The costs of leafing”, Vol. 444, p. 539-541.

Founding Member, Mahtomedi Area Green Initiative (2007), Mahtomedi, MN

U.S. GAO/National Academy of Sciences Workshop on Climate Change Effects on Federal Lands, November 2006, Washington, D.C.

The ARC-NZ Research Network for Vegetation Function, 2005-2010, M. Westoby, I. Wright, co-conveners (Reich is a Core Participant)

*Nature* Research Highlight. Our paper (*Reich et al. 2006, Nature*) featured in *Nature* News & Views, by L. Hedin, 26 January 2006, “Plants on a different scale”, Vol. 439, pp. 399-400.

Department of Energy, National Institute on Climate Change Research, Midwestern Regional Panel, 2006-07

Institute for Scientific Information (ISI) Science Citation Index, One of Top 3 Papers in “Environment and Ecology” in the World, 2004-2006 (Wright, Reich, Westoby and Glopnet 2004, *Nature*).

*Australian Journal of Botany*, Editorial Board 2006-  
*Oecologia*, Editorial Board, 2006 – 2013

*Science*, *Editor's Choice* and *PNAS* Commentary. Our paper *Reich & Oleksyn 2004, PNAS* featured in *Science*, 16 July 2004 “Limits from Leaf Litter”, Vol. 305, p. 311, and in *PNAS* Commentary by L. Hedin, “Global organization of terrestrial plant-nutrient interactions”, 27 July 2004, 101, 10849-10850.

*Science*, *Editor's Choice*. Our paper *Reich et al. 2004, Ecol Monogr* featured in *Science*, 26 March 2004 “The demographics of leaves” Vol. 303, p.1949.

*Australian Journal of Botany*, Editorial Advisory Committee, 2003- 2006

Faculty of 1000 Biology, 2006-  
*Tree Physiology*, Editorial Review Board, 2004-2007  
*Eurasian Journal of Forest Research*, Editorial Advisory Board, 2004 -

National Science Foundation (USA), Biocomplexity and the Environment Program, Coupled Biogeochemical Cycles Panel Member, 2004

Distinguished Ecologist Lecture, Michigan Technological Univ., 2003

Chair of External Review Committee, for the Intercollegiate Ecology Graduate Program at Penn State Univ., University Park, PA, 2003

Lecturer, Intensive International Graduate Student Course, Functional Diversity in Ecosystems, University of Chile and University of Concepción; Concepción Chile, January 2001

Organizer, North American Forest Ecology Workshop, 2001, Duluth, MN

Environment 2000 Lecture, University of Illinois, Champaign-Urbana, 2000

Barnett Endowed Lecture, University of Michigan Biological Station, 1999

Distinguished Lectureship, University of Western Australia, Perth, Australia, 1999

Distinguished Visiting Fellow, Macquarie University, Sydney, Australia, 1998-99

Subject Editor, *Ecology* and *Ecological Monographs*, 1995-98

National Science Foundation (USA), Ecological and Evolutionary Physiology Panel Member, 1994-97

National Science Foundation (USA), LTER Program Coordinating Committee 1994-96

Associate Editor, *Canadian Journal of Forest Research* (Forestry Canada), 1992- 98

Member, Editorial Board, *Trees* (Springer-Verlag), 1991-1996

National Research Council Panel, NAS; Future of Atmospheric Chemistry Research, August 1995

Presidential Young Investigator Award, National Science Foundation (USA), 1988-1993

Japan Science Board, Visiting Professor Research Exchange Fellowship, 1993

National Academy of Science Scientific Exchange Award, 1991

Member, Editorial Review Board *Tree Physiology* (Heron Publishing), 1987-88, 1993-95

USDA National Research Initiative Grants Program, Plant Response to the Environment Panel member, Washington, D.C., 1991

USDA Competitive Grants Program, Forest Biology Panel member, Washington, D.C., July 1990

Center for Forest Environment Studies, U.S. Forest Service, Macon, GA, member of Technical Steering Committee, 1990-1994

Pound Award for Excellence in Research, University of Wisconsin, 1989

U.S. Forest Service, Forest Response Program - Served on Review Panel for Southern Commercial Forest Response Cooperative Research Program, Raleigh, NC, March 1986

Andrew D. White Fellowship, Cornell University, Ithaca, NY, 1978-1981

**UNIVERSITY COURSES TAUGHT**

Forest Ecology	Tree Physiology
Plant Physiological Ecology	Tropical Forest Ecology
Dynamics of Global Change: Plant Ecology	Plant Nutrition, Species Ecology and Nutrient Cycling
Plant Responses to Air Pollution	Patch Dynamics
Climate Change Seminar	Ecophysiology of Managed & Natural Ecosystems
Scaling Seminar	Science & Policy of Global Environmental Change
Landscape Ecology	

**MENTORING**

Formal advisor of 35 students who have received MS or PhD degrees and mentor to an additional  $\approx 30$  scientists (grad students/postdocs) from 20 countries (\*co-advised).

PhD: \*Rachel Putnam (2015), \*Alex Roth (2015), Alexandra Lodge (2015), \*Kerrie Sendall (2012), \*Nick Fisichelli (2012), \*Christel Kern (2011), \*Kris Johnson (2010), \*Nick Danz (2008), Mark Norris (2007), Ann Pierce (2006), \*Andy Holdsworth (2006), Kathleen Knight (2006), \*Roy Rich (2005), \*Cindy Hale (2003), Kim Chapman (2001), \*Martin Dovciak (2001), Steve Friedman (2001), Tali Lee (2001), Mike Tobin (2001), \*Meredith Cornett (2000), Jose-Luis Machado (1999), Dave Peterson (1998), Mark Tjoelker (1997), Dirk Vanderklein (1995), Mike Walters (1994), John Volin (1993), Eric Kruger (1992) David Ellsworth (1991)

MS: \*Chris Pinahs (2012), \*Brian Pelc (2008), Autumn Sabo (2003), Daren Carlson (2001), \*Scott Weyenberg (2001), \*Meredith Cornett (1996), Janet Eckhoff (1994), Leonora Ko (1989)

Postdoctoral Research Associates: \*Adair C, \*Aspinwall M, Butler E, \*Dijkstra F, Boyden S, Butler E, Chen M, \*Dee L, \*Delgado-Baquerizo M, Dickie I, \*Drake J, Eisenhauer N, \* Flores-Moreno H, Frelich L, Heskell, M, \*Lebrija E, Lee T, Milla R, Montgomery R, \*Mueller K, Oleksyn J, Peters E, \*Pfautsch S, Rich R, Schnitzer S, \*Schrodt F, Schuster M, Strengbom J, Tjoelker M, \*West J, Whitfield T. Wragg P

**GRANTS RECEIVED** (since 1986)

National Science Foundation (USA), Computer Science Program, "Mapping plant metabolic traits across the globe", A Banerjee and PB Reich, \$1,080,000, 2016-2019

Minnesota Invasive Terrestrial Plants and Pests Center, Cover It Up! Using Plants to control Buckthorn", 2016-2018, \$327,000

Department of Energy, Earth System Modeling Program, "Global land model development: time to shift from a plant functional type to a plant functional trait approach", 2014-2017 [P Reich PI, A Banerjee co-PI], \$1,347,500

National Science Foundation (USA), Long-Term Ecological Research Program, "LTER: Biodiversity, multiple drivers of environmental change, and ecosystem functioning at the prairie forest border", 2013-2018 [D Tilman, S Hobbie, P Reich, E Seabloom], \$5,880,000.

National Science Foundation (USA), Long-Term Research in Environmental Biology: "LTREB: Longterm Interactions among Biodiversity, CO<sub>2</sub>, and N in a Perennial Grassland Ecosystem", 2012-2017, [P. Reich, S. Hobbie, T. Lee, PIs], \$450,000

Institute on the Environment, University of Minnesota, The Boreal Forest and Community Resilience Project, 2009-2016 [P. Reich, PI], \$800,000

National Science Foundation (USA), Ecosystem Studies Program, "The Complexity of Global Change - Interactive Effects of Warming, Water Availability, CO<sub>2</sub> and N on Grassland Ecosystem Function ", 2011-2015 [P. Reich, PI; R Montgomery, S Hobbie, co-PIs], \$985,000.

U.S. Department of Energy Program for Ecosystem Research. "Warming-induced biome change at the temperate-boreal ecotone: an experimental test of key regeneration processes", 2011-2015 [P Reich, PI; R Montgomery, S Hobbie, R Rich, co-PIs], \$2,520,000

USDA AFRI, "Climate warming of the southern boreal forest: consequences for tree-insect interactions", University of Wisconsin-Madison and University of Minnesota, 2011-2014 [R. Lindroth, K Raffa, P Reich, PIs], \$500,000

Institute on the Environment, University of Minnesota, Transformational Steps in Synthesis Science, 2011-2016 [P. Reich, PI], \$300,000

- DOE NICCR, "Experimental warming effects on soil organic matter dynamics at the temperate-boreal forest ecotone", 2010-2011 [S Hobbie, PB Reich, R Montgomery, PIs] \$117,500
- U.S. Department of Energy Program for Ecosystem Research. "Warming-induced biome change at the temperate-boreal ecotone: an experimental test of key regeneration processes", 2010-2011 [P Reich, PI; R Rich, S Hobbie, R Montgomery, J Oleksyn, co-PIs], \$278,000
- Minnesota LCCMR (Legislative and Citizens Commission for Minnesota Resources), "Healthy Forests to Resist Invasion", 2010-2013 [P. Reich, PI; A. Pierce, co-PI], \$359,000
- Minnesota LCCMR (Legislative and Citizens Commission for Minnesota Resources), "Adaptive management of black ash in light of emerald ash borer invasion", 2010-2012 [A. D'Amato, PI; P. Reich, and others, co-PIs], \$650,000
- Wilderness Research Foundation, "Ecological Health and Change in Quetico-Superior forests", 2007-2013 [P. Reich, PI], \$690,000.
- Minnesota LCCMR (Legislative and Citizens Commission for Minnesota Resources), Projecting Environmental Trajectories for Energy-Water-Habitat Planning, 2009-2011 [P. Reich, PI; C Lehman, and others, co-PIs], \$180,000
- Minnesota Department of Natural Resources, Will an exotic woody invader be more aggressive under climate warming? 2008-2010, [P. Reich, PI], \$75,000
- Department of Energy (USA), Sustainable pathways to achieving biofuel policy goals, 2008-2010, [S. Suh, PI; S Taff, P Reich, co-PIs], \$715,340
- National Science Foundation (USA), Advancing Theory in Biology: "Combining Theories for Plant Architecture, Allometry, and Traits to Develop the Next Generation of Scaling Theory", 2008-2010, [B. Enquist, P. Reich, V. Savage, J. Sperry, PIs], \$737,521
- MN Power, Assessment of carbon flows associated with forest management and biomass procurement for the Laskin biomass facility. [A.R. Ek, D.R. Becker, C.R. Blinn, D. Current, T.E. Burk, A.W. D'Amato, M.A. Kilgore, H.M. Hoganson, P.B. Reich, G.M. Domke, and S. Suh, PIs], 4/2008-12/2008, \$49,428
- Minnesota LCCMR (Legislative and Citizens Commission for Minnesota Resources), Climate change and CO<sub>2</sub> affect prairie/forest production, 2008-2010 [P. Reich, PI; C Lehman, and others, co-PIs], \$330,000, 2008-2010
- Minnesota LCCMR (Legislative and Citizens Commission for Minnesota Resources), Future of Minnesota's Energy and Water Resources, 2008-2010 [S. Suh, PI; P Reich, A Kapuscinski, and others, co-PIs], \$270,000, 2008-2010
- Australia Research Council, Plant ecological strategies across species and an evolutionary-ecology vegetation model, 2008-2010, [M. Westoby, PI; U. Dieckmann, C. Prentice, P. Reich, cooperating investigators), \$AU 968,000
- Australia Research Council, The physiological ecology of forest succession: explaining shade tolerance variation in evergreen and deciduous trees, 2008-2010, [C. Lusk, U. Niinemets, P. Reich, PIs], \$AU 180,000
- National Science Foundation (USA), Long-Term Ecological Research Program, "Biodiversity, Environmental Change and Ecosystem Functioning at the Prairie-Forest Border", 2007-2012 [D. Tilman, P. Reich and other co-PIs], \$4,920,000.
- U.S. Department of Agriculture. Microbial Observatory: A Genomics-enabled FACE Microbial Observatory: Changes in Microbial Diversity and Functions in responding to elevated CO, Nitrogen Deposition and Plant Diversity, \$859,000, 2008-2010 [J. Zhou, L. Kellogg, Z. He, PIs, U. of Oklahoma; Reich is a collaborator and sub-contractor]
- U.S. Department of Energy Program for Ecosystem Research. "Warming-induced biome change at the temperate-boreal ecotone: an experimental test of key regeneration processes", 2007-2011 [P Reich, PI; R Rich, S Hobbie, R Montgomery, J Oleksyn, co-PIs], \$1,806,000
- National Science Foundation (USA), Long-Term Research in Environmental Biology: "LTREB: Longterm Interactions among Biodiversity, CO<sub>2</sub>, and N in a Perennial Grassland Ecosystem", 2007-2012, [P. Reich, S. Hobbie, T. Lee, PIs], \$450,000
- National Institute for Climate Change Research, "Interactions of water, CO<sub>2</sub> and N in an experimental model system", 2006-11 [P. Reich PI], \$620,000.
- College of Food, Agricultural, and Natural Resources Sciences, University of Minnesota, "An Integrated Initiative on Climate Change in Northern Forests", 2007-2009, [P. Reich, R. Rich, R. Montgomery, S. Hobbie, T. Lee, and others PIs], \$200,000



- National Science Foundation (USA), TraitNet: Research Coordination Network for Species Traits, 2007-2012 [S. Naeem, D. Bunker, lead PIs] (Reich is a Core Participant)], \$500,000.
- National Science Foundation (USA), LTER (\$10,000) and NESCent-NCEAS Working Group, pending (\$20,000), Synthesis Working Group: "Linking phylogenetic history, plant traits, and environmental gradients to understand community organization at local and continental scales", [J. Cavender-Bares, D. Ackerly, G. Burleigh, M. Mack, R. Ree, P. Reich, PIs]
- USDA National Research Institute, "Managing for complex structure and wood productivity in Great Lakes pine ecosystems", 2006-2009 [B. Palik, P. Reich, R. Montgomery, PIs], \$400,000.
- USDA Forest Service, "Climate change and forest productivity in the Lakes States", 2006-2008 [P. Reich, PI], \$50,000.
- ARC Discovery Australia Research Council. Plant species economics and strategy-dimensions of plant ecology, 2006-2007, [M. Westoby, D. Ackerly, H. Cornelissen, S. Diaz, D. Ellsworth, P. Reich, PIs], \$AU 400,000
- Bush Foundation, "University of Minnesota Ecosystem Science and Sustainability Initiative", 2006-2008 [A. Kapuscinski, P. Reich, D. Tilman, PIs], (\$600,000)
- National Science Foundation (USA), Biocomplexity Program, "Interacting responses of C and N cycles to altered biodiversity, elevated CO<sub>2</sub>, and N enrichment", 2003-2007 [P. Reich, S. Hobbie and others], \$1,800,000.
- U.S. Forest Service, "Functional responses to overstory retention and understory competition in red pine ecosystems", 2003-2007 [P. Reich], \$169,000.
- National Science Foundation (USA), Ecological and Evolutionary Physiology Program, "Natural Selection and Evolutionary Constraints in an Elevated CO<sub>2</sub> Environment", 2004-2006 [P. Tiffin, P. Reich, R. Shaw, PIs], \$237,000.
- National Science Foundation (USA), Major Research Instrumentation Program, "Development of the Minnesota Terrestrial Integrated Mesocosms for Biophysical and Ecophysiological Research," 2004-2006 [T.J. Griffis, J.M. Cavender-Bares, J.Y. King, M.P. Russelle, P.B. Reich, PIs] \$927,418.
- Bush Foundation, "University of Minnesota Ecosystem Science and Sustainability Initiative", 2004-2006 [A. Kapuscinski, P. Reich, D. Tilman, PIs], \$300,000
- National Science Foundation (USA), Ecosystem Program, "Linking leaf and root traits to ecosystem structure and function in a common garden study of 14 temperate tree species", 2002-2007 [P. Reich, D. Eissenstat, S. Hobbie and others], \$1,080,000.
- National Science Foundation (USA), Long-Term Ecological Research Program, "Biodiversity, disturbance and ecosystem functioning at the prairie-forest border", 2000-2006 [D. Tilman, P. Reich and other co-PIs], \$4,200,000.
- Wilderness Research Foundation, "Ecological Health and Change in Quetico-Superior forests", 2002-2007 [P. Reich, PI], \$530,000.
- National Science Foundation (USA), Ecology Program, "Ecological Consequences of Exotic Invaders: Interactions Involving European Earthworms and Native Plant Communities in Hardwood Forests", 2000-2004 [L. Frelich, P. Reich, PIs], \$318,000.
- National Science Foundation (USA), Long-Term Ecological Research Program, "Schoolyard LTER Program", 1999-2004 [P. Reich and other co-PIs], \$60,000.
- Department of Energy, Terrestrial Ecology Program, "Interaction of biodiversity, CO<sub>2</sub> and soil nitrogen on ecosystem functioning", 2002-2003 [P. Reich, D. Tilman, PIs], \$228,000.
- U.S. Forest Service, "Links between multiple disturbance events: blow-down and fire interactions", 2001-2002 [P. Reich, L. Frelich, R. Rich, PIs] \$20,000.
- Wilderness Research Foundation, "Ecological Health and Change in Quetico-Superior forests", 1999-2002 [P. Reich, PI], \$325,000.
- National Science Foundation (USA), Ecology Program, "Temperature acclimation and adaptation of respiration in eastern deciduous forests", 1998-2001 [P. Bolstad, P. Reich, J. Vose, PIs], \$375,000.
- National Science Foundation (USA), Ecosystem Program, "Biodiversity and the Productivity, Stability and Sustainability of Prairie Ecosystems", 1996- 2001 [D. Tilman, P. Reich, J. Knops, PIs], \$507,000.
- Minnesota Department of Natural Resources, "Natural Regeneration of White Pine", 1999-2002 [L. Frelich, P. Reich, PIs], \$120,000.
- NASA, "Bigfoot: An Approach to Validation of EOS NPP Products", 1998-2001, [W. Cohen, T. Gower, P. Reich, D. Turner, PIs], \$1,500,000 (\$230,000 Minnesota portion of budget).

Department of Energy, Terrestrial Ecology Program, "Interaction of biodiversity, CO<sub>2</sub> and soil nitrogen on ecosystem functioning", 1999-2002 (P. Reich, D. Tilman, PIs), \$1,596,000.

USDA McIntire-Stennis, Agricultural Experiment Station, "Forest Response to Environmental Change", 2000-2004 [P. Reich, PI], \$80,000.

National Science Foundation (USA), Ecosystem Program, "Linking leaf and root traits to ecosystem structure and function in a common garden study of 14 temperate tree species", 2001-2002 [P. Reich, J. Oleksyn, D. Eissenstat, S. Hobbie, PIs], \$49,000.

National Science Foundation (USA), Doctoral Dissertation Improvement Grants Program, "Restoration of upland white cedar in northeastern Minnesota, 1996-1998 [P. Reich, M. Cornett, L. Frelich, PIs], \$9,500.

NASA, "Local Validation of Global Estimates of Biosphere Properties: A Synthesis of Scaling Methods and Results Across Several Major Biomes", 1996-97 [a multiple site/investigator project, P. Reich, P. Bolstad, PIs for Minnesota site], \$27,500 (Minnesota portion of budget).

Department of Energy, Terrestrial Ecology and Global Change Program, "Interaction of biodiversity, CO<sub>2</sub> and soil nitrogen on ecosystem functioning", 1996-1999 (P. Reich, D. Tilman, S. Naeem, J Knops, PIs), \$1,560,000.

Minnesota Department of Natural Resources, "Natural Regeneration of White Pine", 1997-1999 [L. Frelich, P. Reich, PIs], \$80,000.

Wilderness Research Foundation, "Ecological Health and Change in Quetico-Superior forests", 1996-1999 [P. Reich, PI], \$255,000.

National Institute for Global Environmental Change, "Measuring and Modeling Component and Whole-system CO<sub>2</sub> Flux at Local to Regional Scales", 1997-2000 [P. Bolstad, P. Reich, K. Davis], \$390,000.

National Science Foundation (USA), Ecological and Evolutionary Physiology Program, "Biogeographic adaptation to temperature, photoperiod and CO<sub>2</sub> in boreal conifers", 1996-2001 [P. Reich, J. Oleksyn, M. Tjoelker, PIs], \$316,000.

National Science Foundation (USA), International Programs, "Convergence and divergence in leaf traits", 1999-2000 [P. Reich, PI], \$29,700.

National Council for Air and Stream Improvement, "Ecosystem management of Minnesota forests: a stand-to-landscape approach to sustainability and biodiversity in harvested and undisturbed forests", 1995-2000 [P. Reich, D. Grigal, L. Frelich, M. Bauer, PIs], \$200,000.

National Science Foundation (USA), Long-Term Ecological Research Program, "Succession, biodiversity and ecosystem functioning at the prairie-forest border", 1994-2000 [D. Tilman, P. Reich and other co-PIs], \$3,380,000.

National Science Foundation (USA), Ecology Program, "Mechanisms of patch maintenance in old-growth hemlock-hardwood forest ecosystems", 1995-98 [P. Reich, M. Walters, L. Frelich, K. Puettmann, PIs], \$297,000.

USDA McIntire-Stennis, Agricultural Experiment Station, "Ecosystem management of Minnesota forests: an integrated stand-to-landscape approach to succession, biodiversity, structure and function in harvested and unharvested northern forests", 1995-1999 [P. Reich, M Bauer, D. Grigal, PIs], \$241,000.

National Science Foundation (USA), Terrestrial Ecology and Global Change Program, "Forest change in a boreal transition region: productivity, nutrient cycling and biodiversity at multiple scales", 1995-1998 [P. Reich, D. Grigal, P. Bolstad, M. Bauer, PIs], \$428,000.

Minnesota Department of Natural Resources, "Restoration Ecology of White Cedar", 1994-1998 [L. Frelich, P. Reich, PIs], \$40,000.

Minnesota Legislative Commission on Minnesota Resources, "Developing Quality Hardwood Forests", 1993-1995 [M. Baughman, T. Burk, P. Reich, co-PIs], \$210,000.

National Academy of Sciences Scientific Exchange Program, "Air Pollution and Scots pine physiology", 1993, [P. Reich, PI], \$12,100.

Wilderness Research Foundation, "Ecological Health and Change in Quetico-Superior forests", 1992-1996 [P. Reich, PI], \$172,000.

National Science Foundation (USA), Presidential Young Investigator Award, "Plant ecophysiology of temperate and tropical forest systems", 1988-1994 [P. Reich, PI], \$312,500.

USDA Competitive Grants, Forest Biology Program, "Post-fire ecology of red oak and competing hardwood regeneration", 1990-1993 [P. Reich, E. Kruger, S. Gower, M. Abrams, co-PIs], \$129,000.



National Science Foundation (USA), "Synergistic effects of elevated CO<sub>2</sub> and O<sub>3</sub>: role of interspecific differences in stomatal conductance and photosynthetic pathway", 1991-92 [P. Reich, T. Givnish, J. Volin, co-PIs], \$80,000.

National Geographic Society, "Air Pollution in Eastern Europe: Problems and Perspectives," 1991-1992 [P. Reich, J. Oleksyn co-PIs], \$24,150.

National Science Foundation (USA), Ecology Program, "Production and resource use efficiency of larch and sympatric evergreen conifers," 1991-1994 [S. Gower, P. Reich, co-PIs], \$200,000.

USDA Competitive Grants, Forest Biology Program, "Seasonal carbon, water, and nitrogen relations in pine and oak forests", 1986-1989 [P. Reich, J. Fownes, co-PIs], \$111,000.

USDA Competitive Grants, Forest Biology Program, "Physiological responses of conifers to sawfly attack", 1987-1990 [K. Raffa, P. Reich, co-PIs], \$150,894.

National Science Foundation (USA), "Carbon and nutrient relations among oligotrophic forest communities in the north central Amazon basin", 1989-1991 [P. Reich, C. Uhl, co-PIs], \$127,500.

National Council of the Paper Industry for Air and Stream Improvement, "Integrated studies of the effects of ozone pollution on forests", 1989-1993 [P. Reich, PI], \$112,500.

McIntire-Stennis Program, USDA, "Effects of acid rain and heavy metal pollution on the physiology of north central forest tree species", 1986-1990 [P. Reich, PI], \$77,000.

Academy of Finland, National Research Council for Agriculture and Forestry, "Factors affecting cold hardiness in forest trees", 1987-1989 [M. Sutinen, P. Reich, co-PIs], \$20,000.

Graduate School, University of Wisconsin and C.W. Nave Fund for Latin American Research, "Rain forest ecophysiology in the northern Amazon Basin", 1986-1988 [P. Reich, PI], \$20,465.

University-Industry Research Program, University of Wisconsin, "Physiological response of red pine trees to fertilizer and sludge treatment", 1986-1988 [P. Reich, PI], \$17,465.

Graduate School, University of Wisconsin, "Photosynthesis, stomatal control of water loss, and water use efficiency during leaf aging in several tree species", 1986-1987 [P. Reich, PI], \$14,682.

#### REVIEWER FOR

##### Agencies:

Ministry of the Environment (Denmark)  
 Environmental Protection Agency (USA)  
 National Aeronautics and Space Administration (USA)  
 Department of Energy- Terrestrial Ecology Program (USA)  
 Department of Energy- Carbon Cycling Program (USA)  
 NSF- Biocomplexity Program (USA)  
 NSF- Ecology Program (USA)  
 NSF- Ecosystems Program (USA)  
 NSF- Ecological and Evolutionary Physiology Program (USA)  
 NSF- International Program (USA)  
 Natural Environment Research Council (UK)  
 Smithsonian Institution (USA)  
 USDA Competitive Grants Research- Forest Biology (USA)  
 USDA/NRI- Plant Response to the Environment (USA)  
 USDA/NRI- Ecosystems Program(USA)  
 U.S. Forest Service (USA)  
 U.S. National Park Service (USA)  
 Simbiota (International)  
 Wisconsin Department of Natural Resources (USA)

##### Journals (ad hoc referee):

Agronomy Journal; American Naturalist; American Journal of Botany; American Midland Naturalist; Annals of Botany; Biogeochemistry; Biotropica; Can Journal of Botany; Can J of Forest Research; Climatic Change; Crop Science; Ecological Applications; Ecological Monographs; Ecology; Ecology Letters; Ecosystems; Environmental Pollution; Forest Ecology and Management, Forest Science; Functional Ecology; Global Change Biology; HortScience; Journal of Ecology; Journal of Environmental Quality; J Experimental Biology; Nature; Nature Climate Change; Nature Geoscience; Nature Plants; New Phytologist; Oecologia; Oecologia Plantarum; Oikos; Physiologia

Plantarum; Plant, Cell and Environment; Plant Ecology; Plant Physiology; Proc National Academy Sciences; PLOS Biology; Remote Sensing of Environment; Science; Tree Physiology; Trees; Trends in Ecology and Evolution; Water, Air, and Soil Pollution

**PRESENTATIONS AT CONFERENCES, CONGRESSES, AND RELATED (as author or co-author)**

Approximately 275 (with published abstracts), 400 (in total), 1980-2016

**PUBLICATIONS** (Refereed, ~525 total; ~ 500 journal articles, ~25 book chapters and other)**2016**

- Ali, A. A., Xu, C., Rogers, A., Fisher, R. A., Wulschleger, S. D., McDowell, N. G., Massoud, E. C., Vrugt, J. A., Muss, J. D., Fisher, J. B., Reich, P. B., and Wilson, C. J. 2016. A global scale mechanistic model of photosynthetic capacity (LUNA V.1.0), *Geosci. Model Dev.* 9: 587-606, doi:10.5194/gmd-9-587-2016
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- Aspinwall, MJ, Drake JE, MG Tjoelker, C Company, A Vårhammar, O Ghannoum, DT Tissue, PB Reich. Convergent acclimation of leaf photosynthesis and respiration to prevailing ambient temperatures under current and warmer climates in *Eucalyptus tereticornis*. *New Phytol* doi: 10.1111/nph.14035
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- Delgado-Baquerizo, M, FT Maestre, PB Reich, TC Jeffries, JJ Gaitan, D Encinar, M Berdugo, CD Campbell and BK Singh. 2016. Microbial diversity drives multifunctionality in terrestrial ecosystems. *Nature Communications* DOI: 10.1038/ncomms10541.
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- Delgado-Baquerizo M, F.T. Maestre, P.B. Reich, P. Trivedi, Y. Osanai, Y. Liu, K. Hamonts, T.C. Jeffries, B.K. Singh. 2016. Carbon content and climate variability drive global soil bacterial diversity patterns. *Ecological Monographs* DOI: 10.1002/ecm.1216.
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